

REMARKS

In response to the Final Office Action mailed December 29, 2005, Applicant respectfully requests reconsideration. Claims 1-39 are currently pending in this application, with claims 10-39 being withdrawn from consideration due to the constructive election set forth in point 3 of the Final Office Action. Claim 1 has been amended solely for the purpose of clarification. As a result, claims 1-39 are pending for examination with claims 1, 10 and 17 being independent claims. No new matter has been added.

Allowable Subject Matter

Applicant notes with appreciation the indication of allowable subject matter in claim 6.

Rejection of Dependent Claims

Dependent claims 2-5 and 7-9 were rejected using various combinations of multiple different references. However, the only rejection with respect to independent claim 1 is a §102 rejection in view of Pfirsch. However, the rejections with respect to the dependent claims will not be discussed further because they depend on claim 1, which patentably distinguishes over the art of record as discussed below.

Election of Species Requirement

The Office Action indicated that claims 10-39 are directed to inventions that are distinct from the invention originally claimed in claims 1-9. In particular, the Final Office Action identifies species I as claims 1-9, species II as claims 10-16, and species III as claims 17-39. The Office Action constructively elected species I, and withdrew claims 10-39 from consideration as being directed to non-elected inventions. Applicant respectfully traverses this election requirement.

M.P.E.P. 803 states:

If the search and examination of all the claims in an application can be made without serious burden, the Examiner must examine them on the merits, even though they include claims to independent or distinct inventions.

The Final Office Action withdrew claims 10-39 from consideration because these claims were added by amendment and not originally presented. However, the mere addition of new claims

is not sufficient grounds for an election requirement. In particular, M.P.E.P. 803 states that the Examiner must examine all the claims on the merits, if all the claims in the application can be made without serious burden.

Applicant respectfully submits that claims 10-16 can be searched and examined without serious burden on the Examiner. In fact, the Examiner has already performed a search for claim 10 because claim 10 is substantially a combination of claims 1, 2 and 3 as originally presented, which have already been searched and examined. Therefore, there should be no undue burden to examine claim 10 on the merits because a similar search and examination was already performed for claims 1, 2 and 3. Claims 11-16 are narrower than claim 10 by dependency, and therefore should not raise an undue burden of search and examination.

Applicant respectfully submits that claims 17-39 can be searched and examined without serious burden on the Examiner. Claim 17 is directed to a semiconductor component of the type that the Examiner has already searched and examined with respect to claims 1-9. Therefore, claim 17 can be examined without serious burden on the Examiner because the Examiner has already completed much if not all of the search required for claim 17. Claims 18-39 are narrower than claim 17 by dependency, and therefore should not raise an undue burden of search and examination.

In view of the foregoing remarks, withdrawal of the election requirement and an examination on the merits of claims 10-39 is respectfully requested.

Rejections Under 35 U.S.C. §102

The Final Office Action rejected claim 1 under 35 U.S.C. §102(b) as being anticipated by Pfirsch (U.S. Pat. No. 6,201,279). Applicant respectfully traverses this rejection.

Pfirsch describes a semiconductor component having a small forward voltage and high blocking ability (Title). FIG. 3 illustrates an example of a p-n diode having a p-n junction at the intersection of n region 3 and p region 4. P-conducting pillars 8 are provided adjacent to the n-type region 3 to provide compensation charges to provide a linear rise in potential between electrodes 5 and 6 (col. 5, line 58 to col. 6, line 16, and col. 5, lines 29-39). FIG. 7 illustrates a Schottky diode having p-conducting pillars similar to the p-conducting pillars 8 illustrated in FIG. 3. The p-conducting pillars in illustrated in FIGS. 3 and 7 are provided for compensation purposes: to

maintain the uniformity of the electric field in the diode while it is reverse-biased (col. 3, lines 14-20 and col. 5, line 58 – col. 5, line 17). Pfirsch does not appear to describe forward-biased operation of the diodes shown in FIGS. 3 and 7. However, it appears from FIGS. 3 and 7 that the main current flows vertically through the diode while it is forward biased, as the diode is a vertical structure (col. 7, lines 1-2). In FIG. 3, the main diode current should flow from electrode 5, through p-region 4, through the p-n junction between regions 3 and 4, through n region 4, and through n+ region 2 to electrode 6. The diode shown in FIG. 7 appears to operate in a similar manner as the diode illustrated in FIG. 3 operates, but with a Schottky junction instead of a p-n junction. In both FIGS. 3 and 7, the main diode current flows through a junction (4-3 or 5-3, respectively) that is parallel to the surface of the semiconductor chip.

By contrast, claim 1 as amended recites:

A semiconductor component in which the active junctions extend perpendicularly to a first surface of a semiconductor chip substantially across an entire thickness thereof, the active junctions being configured to conduct a main current of the semiconductor component, wherein the semiconductor chip has a first metallization associated with the first surface and a second metallization associated with a second surface, the first and second surfaces being on opposing sides of the semiconductor chip.

Claim 1 patentably distinguishes over Pfirsch because Pfirsch does not teach or suggest **active junctions that extend perpendicularly to a first surface of a semiconductor chip substantially across an entire thickness thereof, the active junctions being configured to conduct a main current of the semiconductor component.** Rather, the p-n junction of regions 3-4 that carries the main diode current is parallel to the surface of the semiconductor component. Furthermore, as discussed above, the p-n junction between regions 7 and 8 in FIGS. 3 and 7 of Pfirsch is merely used to provide countercharges for establishing a uniform electric field in the diode while it is reverse-biased. Therefore, claim 1 patentably distinguishes over Pfirsch. Accordingly, withdrawal of the rejection of claim 1 is respectfully requested. Furthermore, claim 1 patentably distinguishes over the art of record, including the art cited against the dependent claims, but not cited against claim 1.

Claims 2-5 and 7-9 depend from claim 1 and are therefore patentable for at least the same reasons.

CONCLUSION

A Notice of Allowance with respect to all claims in the application is respectfully requested. The Examiner is requested to call the undersigned at the telephone number listed below if this communication does not place the case in condition for allowance.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

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Respectfully submitted,

By 

James H. Morris

Registration No.: 34,681

WOLF, GREENFIELD & SACKS, P.C.

Federal Reserve Plaza

600 Atlantic Avenue

Boston, Massachusetts 02210-2206

(617) 646-8000